IN THE CLAIMS

1. (Currently Amended) A process for producing chlorine dioxide, the process comprising:

feeding an aqueous alkali metal chloride solution into an anode compartment of an electrolytic reactor, wherein the electrolytic reactor comprises the anode compartment comprising an anode, a cathode compartment comprising a cathode, and a central compartment positioned between the anode and cathode compartments, wherein the central compartment comprises a particulate material;

feeding an effluent from the anode compartment and an aqueous alkali metal chlorite solution into the central compartment of an electrolytic reactor; and

applying a current to the electrolytic reactor to produce an effluent containing chlorine dioxide from the central compartment, wherein the chlorine dioxide is at a percent conversion greater than 75 percent based on an amount of the alkali metal chlorite.

2. (Original) The process of Claim 1, wherein the effluent from the anode compartment comprises hypochlorous acid and hydrogen chloride.

3. (Original) The process of Claim 1, wherein the particulate material comprises a catalyst material, a cation exchange material, or a mixture of the cation exchange material and the catalyst material.

4. (Original) The process according to Claim 3, wherein the cation exchange material has a cross linking density greater than about 8 percent.

5. (Original) The process of Claim 1, wherein the alkali metal chlorite solution has a concentration after introduction of the effluent from the anode compartment of less than about 10,000 milligrams alkali metal chlorite per liter of solution.

6. (Original) The process according to Claim 1, wherein the alkali metal chlorite solution has a concentration after introduction of the effluent from the anode compartment of less than about 5,000 milligrams alkali metal chlorite per liter of solution.

7. (Original) The process according to Claim 1, wherein the alkali metal chlorite solution has a concentration after introduction of the effluent from the anode compartment of less than about 1,500 milligrams alkali metal chlorite per liter of solution.

8. (Original) The process according to Claim 1, wherein the effluent containing the chlorine dioxide contains at least 90 percent by weight of chlorine dioxide relative to all chlorine species produced in the chlorine dioxide product.

9. (Original) The process according to Claim 1, wherein the aqueous alkali metal chloride solution contains less than about 20.0 grams alkali metal chloride per liter of solution.

10. (Currently Amended) A process for producing chlorine dioxide from an alkali metal chlorite solution, the process comprising:

applying a current to an electrolytic reactor, wherein the electrolytic reactor includes an anode compartment comprising an anode, a cathode compartment comprising a cathode, and a central compartment positioned between the anode and cathode compartments, wherein the central compartment comprises a cation exchange material and is separated from the cathode compartment with a cation exchange membrane;

feeding an aqueous sodium chloride solution to the anode compartment;

electrolyzing the aqueous sodium chloride solution in the anode compartment to produce a hydrogen chloride and/or a hypochlorous acid containing effluent; and

feeding the hydrogen chloride and/or the hypochlorous acid containing effluent and an alkali metal chlorite solution into the central compartment to produce a chlorine dioxide effluent from the central compartment, wherein the chlorine dioxide is at a percent conversion greater than 75 percent based on an amount of the alkali metal chlorite.

11. (Original) The process of Claim 10, wherein the chlorine dioxide effluent contains at least about 90 percent by weight of chlorine dioxide with respect to all chlorine species in the chlorine dioxide effluent.

12. (Original) The process according to Claim 10, wherein the alkali metal chlorite solution is selected from the group consisting of lithium chlorite, sodium chlorite and potassium chlorite.

13. (Original) The process according to Claim 10, wherein the effluent containing the hydrogen chloride and/or the hypochlorous acid has a pH of about 1 to about 5.

14. (Original) The process according to Claim 10, wherein the central compartment further comprises a catalyst material comprises an oxide of a noble metal and a ceramic support.

15. (Currently Amended) A process for producing chlorine dioxide from an alkali metal chlorite solution, the process comprising:

applying a current to an electrolytic reactor, wherein the electrolytic reactor includes an anode compartment comprising an anode, a cathode compartment comprising a cathode, and a central compartment positioned between the anode and cathode compartments, wherein the central compartment comprises a cation exchange material and is separated from the cathode compartment with a cation exchange membrane;

feeding an aqueous sodium chloride solution to the anode compartment;

electrolyzing the aqueous sodium chloride solution in the anode compartment to produce a chlorine gas containing effluent; and

feeding the chlorine gas containing effluent and an alkali metal chlorite solution into the central compartment to produce a chlorine dioxide containing effluent from the central compartment, wherein the chlorine dioxide is at a percent conversion greater than 75 percent based on an amount of the alkali metal chlorite.

16. (Original) The process of Claim 15, wherein the chlorine dioxide containing effluent contains at least about 90 percent by weight of chlorine dioxide with respect to all chlorine species in the chlorine dioxide effluent.

17. (Original) The process of Claim 15, wherein the chlorine gas containing effluent further comprises hydrogen chloride and hypochlorite.

18. (Original) The process of Claim 15, wherein the cation exchange material has a cross linking density of at least 8 percent.

19. (Original) The process of Claim 15, wherein the aqueous sodium chloride solution contains less than about 20.0 grams sodium chloride per liter of solution.